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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/054,186
Filing Date: January 22, 2002
Appellant(s): MATTSON, GEOFFREY

Holmes W. Anderson Reg. No. 37,272
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 11, 2008 appealing from the Office action mailed November 27, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6904018	Lee et al.	6-2005
7120151	Ginjpalli et al.	10-2006

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (6904018) in view of Ginjpalli (7120151).

Regarding claims 1 and 14, Lee teaches a method of providing backup resources for a primary label switched path (LSP) in a label switching network (Column 2, lines 64 – 67), the primary LSP having at least a portion for transmitting data packets containing a label from a first label switching node to a second label switching node (Column 1, lines 21 – 25), said portion including at least one intermediate label switching node between the first and second nodes (Figure 3, elements LSR2-15), the method comprising the steps of:

defining at least one backup LSP starting from the first node and merged with the primary LSP at the second node (Column 3, lines 43 – 46), the at least one backup LSP for re-routing data packets around the at least one intermediate label switching node in the event of a failure of the intermediate label switching node (Figure 5, where the loopbacked traffic bypasses LSR 3, 4 and 6);

determining a transformation of the label of a packet transmitted along said portion of the primary LSP from an output of the first node to an input of the second node the transformation including label stack manipulations performed by the at least one intermediate label switching node (Column 1, lines 27 – 31);

configuring the first node to switch a packet to the backup LSP upon detection of a failure in said portion of the primary LSP (Column 4, lines 50 – 61); and

configuring at least one node of the backup LSP to process the label of any packet transmitted along the backup LSP (Figure 4, "looked back traffic flow after failure) so as to apply the same transformation as said transformation of the label of a packet transmitted along said portion of the primary LSP from an output of the first node to an input of the second node (Column 1, lines 27 – 31).

Lee does not explicitly indicate that the packet has a label stack on which to push and pull labels from, just swaping the values of labels and that the transformation to the label stack is applied so that the label stack received from the backup LSP at an input to the second label switching node corresponds to the label stack received from the portion of the primary LSP at the input of the second label switching node.

Ginjpalli teaches a label switching network that uses a label stack (Column 2, lines 62 – 65) and provides a backup LSP which includes a transformation to the label stack so that the label stack received from the backup LSP at an input to the second label switching node corresponds to the label stack received from the portion of the primary LSP at the input of the second label switching node (Column 5, lines 30 – 31)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Ginjpalli's teaching of label stacks and label stack transformations in Lee's system in order to quickly recover from node failure with little delay and only slight label stack modification.

Regarding claims 2 and 15, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the node of the backup LSP configured to apply the

transformation is the first node, said transformation being applied prior to pushing a label of the backup LSP (Column 2, lines 13 – 18; see also Ginjapalli, Column 5, lines 25 – 27) and including at least one of a label swapping and a label popping manipulation (Column 1, lines 27 – 31).

Regarding claims 3 and 16, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the node of the backup LSP configured to apply the transformation is the second node (Figure 3, LSR8, wherein LSR8 is show to allow the transformation of the label stack to send the packets along a backup LSP; see also Ginjapalli, Column 5, lines 25 - 27).

Regarding claims 4 and 17, Lee teaches a method as claimed in claims 1 and 14 respectively wherein the step of determining the transformation of the label stack comprises transmitting messages of a signaling protocol between the nodes of said portion of the primary LSP (Column 4, lines 42 – 56), including indications of label stack manipulations performed by said nodes on packets transmitted along the primary LSP, said indications being processed at one of the first and second nodes for deriving said transformation (Column 4, lines 47 – 49).

Regarding claims 5 and 18, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the step of determining the transformation of the label stack comprises transmitting at least one sample packet from the first node to the second node along said portion of the primary LSP (Column 4, lines 42 – 56).

Regarding claims 6 and 19, Lee teaches a method as claimed in claims 1 and 14 respectively, wherein the first node is configured to switch a packet intended for the

primary LSP to the backup LSP upon detection of a failure in said portion of the primary LSP up to the intermediate node situated next to the first node (Column 4, lines 50 – 61).

Regarding claims 7 and 20, Lee teaches a method as claimed in claims 1 and 14 respectively, further comprising the steps of: defining at least one switchback LSP from an intermediate node of the primary LSP to the first node (Column 4, lines 16 – 22); and configuring said intermediate node to switch a packet to the switchback LSP upon detection of a failure in said portion of the primary LSP downstream of said intermediate node and up to the node situated next to said intermediate node (Column 4, lines 16 – 22).

Regarding claim 8 and 21, Lee teaches a method as claimed in claims 7 and 20, respectively, further comprising the step of configuring the first node to switch to the backup LSP any packet received on the switchback LSP (Figure 3, the looped back traffic flow starting at node LSR 6 and travels to first node LSR 9 and 1, and travels along the backup LSP).

Regarding claims 9 and 22, Lee teaches a method as claimed in claims 8 and 20, further comprising the steps of: determining a second transformation of the label stack as the inverse of a transformation of the label stack of a packet transmitted along said portion of the primary LSP from the output of the first node to said intermediate node; and configuring at least one node of the switchback LSP to process the label stack of any packet transmitted from said intermediate node along the switchback LSP

so as to apply said second transformation (Figure 3, for the immediate nodes changing the labels to push the traffic flow back to the ingress nodes and down the back up LSP).

Regarding claims 10 and 23, Lee teaches a method as claimed in claims 9 and 22, wherein the node of the switchback LSP configured to apply the second transformation is said intermediate node, the second transformation being applied prior to pushing a label of the switchback LSP (Figure 3, for the immediate nodes changing the labels to push the traffic flow back to the ingress nodes and down the back up LSP).

Regarding claims 11 and 24, Lee teaches a method as claimed in claims 10 and 23, wherein the primary LSP has at least one additional intermediate node between the first node and said intermediate node, wherein the switchback LSP is defined to comprise the nodes of the primary LSP, in a reverse direction, from said intermediate node to the first node (Figure 3, for the immediate nodes changing the labels to push the traffic flow back to the ingress nodes and down the back up LSP).

Regarding claims 12 and 25, Lee teaches a method as claimed in claims 11 and 24, further comprising the step of configuring said additional intermediate node to switch a packet to the switchback LSP upon detection of a failure in said portion of the primary LSP downstream of said additional intermediate node and up to the node situated next to said additional intermediate node (Column 4, lines 42 – 56).

Regarding claims 13 and 26, Lee discloses a method as claimed in claims 12 and 25, further comprising the steps of: determining a third transformation of the label stack as the inverse of a transformation of the label stack of a packet transmitted along said portion of the primary LSP from the output of the first node to said additional

intermediate node; and configuring said additional intermediate node to process the label stack of any packet that it switches to the switchback LSP so as to apply said inverse transformation prior to pushing a label of the switchback LSP (Figure 3, for the immediate nodes each having to change the labels to push the traffic flow back to the ingress nodes and down the back up LSP).

(10) Response to Argument

The appellant argues that the combination of Lee and Ginjpalli does not teach (1) "re-routing data packets around the at least one intermediate label switching node", (2) "the transformation including label stack manipulations performed by the at least one intermediate label switching node", and (3) applying the same transformation along the backup path as would have been made along the primary path. More specifically, the appellant argues that (4) Ginjpalli only considers a scenario where a link fails and a network node does not need to be bypassed.

The examiner disagress:

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The applicant seems to attack the reference, Ginjpalli, individually without considering the combination of Lee and Ginjpalli.

(4) Also in regards to the appellant's arguments that Ginjpalli only teaches the instance where a link has failed and not the situation where entire nodes are by-passed, it is important to note, that Figure 7, is considered only **an example** of a link reroute in Ginjpalli's network (Column 5, line 13 - 15), it is not the only embodiment of Ginjpalli's teaching of rerouting label switched paths. Column 3, lines 20 – 23 of Ginjpalli teaches other conditions where a backup label switch path will be needed, which includes node failures and instances where alternative tunnels need to be used. The idea of creating a new label stack for a backup LSP in Ginjpalli takes into account the instances where entire new label paths must be traversed and is not limited to the example of Figure 7, where only one backup LSR is added to the path to avoid the failed network links. (*See* Column 3, lines 45 – 47; Column 4, line 44 – Column 5, line 11). Ginjpalli further notes the importance of returning the label stack to its original state in Column 5, lines 27 - 35. This is an important concept of the invention in Ginjpalli and is not limited to the specific example of the single link failure as well. It teaches that the backup links are preconfigured to adjust (or "transform") the label stack of the packet to remove any trace of the backup route that it traversed and returned it to the form that label stack would have contained if it had traversed the primary path (the link protection process).

(1) Regarding the limitation "re-routing data packets around the at least one intermediate label switching node," Lee teaches the system of using backup LSP that skips primary LSP nodes (see Figure 5). Ginjpalli also teaches a backup LSP that becomes active if a node has failed, where in the case of node failure packets must be re-routed not to a path that does not require that failed node, thus by-passing it (*See*

Column 3, lines 21 - 23). Since both Lee and Ginjpalli teach this limitation, then the combination of Lee's teaching of re-routing packets through a LSP network from a primary path to a backup path, in combination with Ginjpalli's improve of having label stacks within the packet and using those label stacks to send the packets down backup LSPs, also teaches the limitation.

(2) Regarding the limitation "the transformation including label stack manipulations performed by the at least one intermediate label switching node," that limitation is broad in the fact its scope can cover two interpretations. The first interpretation that part of the transformation done to a packet's label stack is performed by the intermediate node, which the appellant identifies as the bypassed node (*See* Appellant's brief page 7) The second interpretation is that the transformation performed on the label stack includes manipulations that would have been performed by the skipped node. Both interpretations are valid according to the claim language and the appellant's brief does not seem to discuss the limitation beyond its words in the claim.

Ginjpalli teaches the importance and the step of transforming a label stack of a packet to be "the identical diagram" from the backup LSP as the diagram would have been if it had traversed the primary path. (See Column 5, lines 27 - 35). For the diagram to be identical, as stated in Ginjpalli, then the backup LSP must have performed the same changes along the backup path as on the primary path, this includes any changes that the skipped node would have made to the packet. So if the backup node diagram is the same as the primary path diagram, that backup diagram

must have included the same manipulations as the diagram in the primary path would have received, thus meeting the second interpretation of the claim.

(3) Regarding the limitation about having the backup LSP applying the same transformation as would have been made along the primary path, as shown in the argument to (2), Ginjpalli teaches that the diagram after the backup path gets adjusted at the end of the preconfigured backup LSP to be identical to the diagram that would have been received if the packet had traversed the primary path. (*See* Column 5, lines 27 – 35).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Kevin Bates/

Examiner, Art Unit 2153

Conferees:

/Glenton B. Burgess/

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